4-22 (1) **Program Directive**

Program/Project MMTS - OU III **Directive No.** MSG-03-01

Task Order No. STO03-105 (Task No. 110505008)

MRAP OUIII AR 576 4-22 PROGRAM DIRECTIVES MMTS DIRECTIVES OUIII - 3 DOCUMENTS ON CHANGE OF DIRECTION 02-03

Initiated By: Farlie Pearl, QA Specialist

Directive Subject: Modifications to the OU III January 2003 water sampling event and locations.

Justification and Associated New Task Changes: Agreements reached with DOE and the regulators (UDEQ and EPA) during the December 2002 OUIII technical meeting to conduct a focused sampling event during January and July of 2003.

Directive:

General:

1. At the direction of DOE, Program Directives will continue to be used to direct field activities, affect changes to the Annual Monitoring Plan and implement technical direction resulting from meetings between DOE and the regulators.

2. Attachment 1 identifies locations, field parameters, analytes, preservation and relevant field notes. This table will be affixed into each field book used during a sampling event. Additionally, it will be updated before each event to tailor the locations, analytes, etc. as appropriate to the sampling event.

Ground Water (all wells, including PeRT):

1. To the extent possible purge and sample all wells using low-flow techniques.

2. For wells that have been purged dry, a sample may be collected provided the following water level criteria has been met: When returning to collect a sample from wells that have been purged dry and or have poor recovery, revisit the well (allow a minimum of 2 hours or wait until the next day) and re-measure and record the WL. If the level has not returned to 75% of the original measured WL *DO NOT* collect a sample. If the level exceeds the 75%, collect what sample you can, according to the following priority list; metals, nitrate/nitrite, anions, gross alpha/gross beta. Do not return time and again to try to collect sufficient volume for partial or full samples.

Changes to OU III sample locations for January 2003

1. No surface water or seep locations will be sampled during this event
2. Water levels and well inspections will only be obtained/documented for the 17 locations that are scheduled to be sampled.
3. All samples and alkalinity measurements will be obtained through field filtration
4. A list of the sample locations, analytes, and container/preservation requirements are provided on Attachment 1
5. Sample locations are shown on the field maps in Attachments 2 and 3

Organization(s) Affected: Field sampling personnel and GJO Analytical Laboratory

Affected Documents:

MMTS, OU III, Interim Remedial Action Surface Water and Ground Water Monitoring Plan, Rev. 3, December 1999 (MAC-MSGRAP 1.3.5-1)

Effective Date: January 6, 2003 **Expiration Date:** January 31, 2003

Review and Concurrence:

Dave Miller, Field Supervisor

Task Order Manager Approval to Issue:

for KLM

Kristen McClellen, OUIII Project Manager

1/9/03

Distribution: w/ Attachments
Program Directive Log
Jalane Glasgow - Record File MRAP 1.3.5
Holders of all affected documents
Farlie Pearl (2 copies) - Project Administrative Record

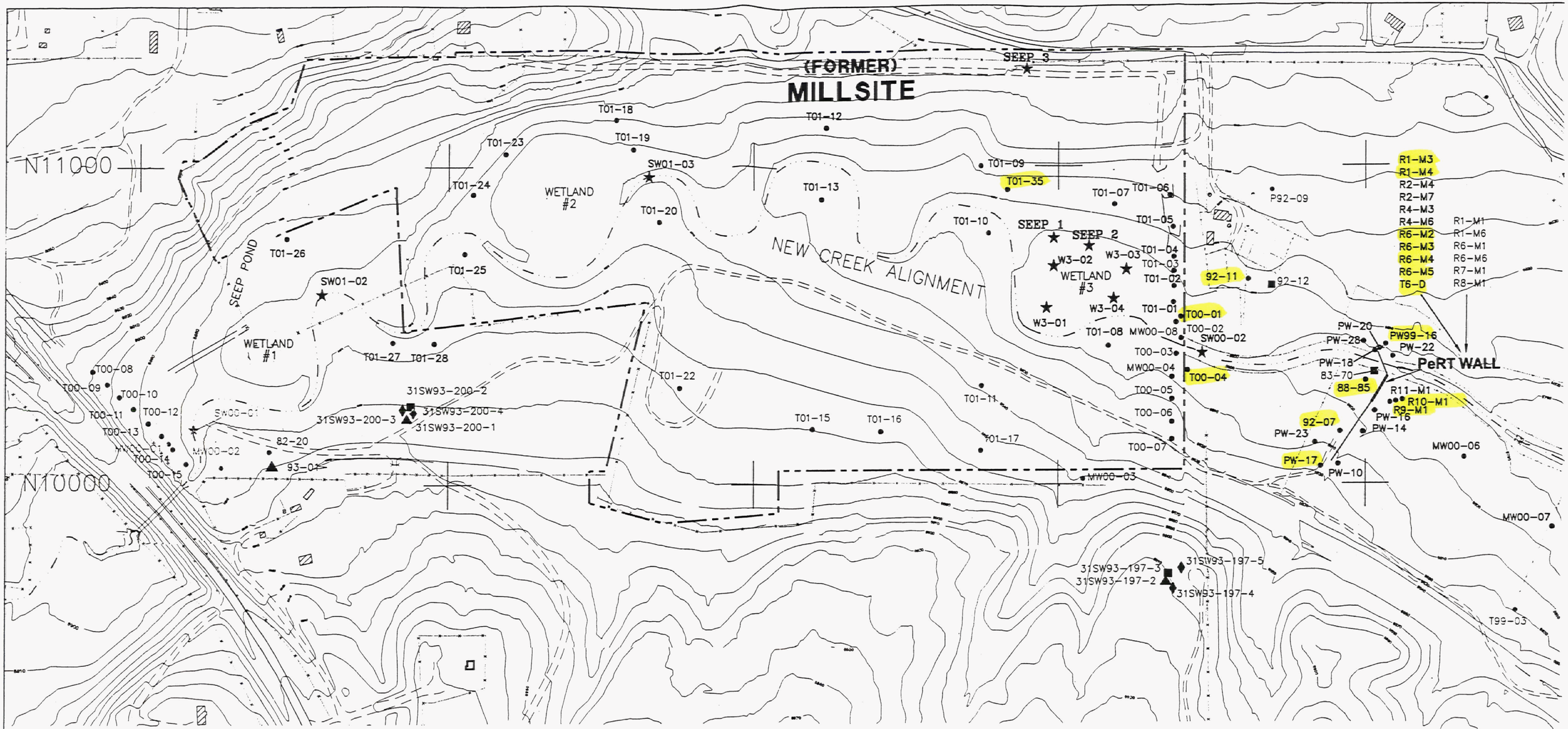
Location No.	Total Depth[a]	Depth to Water[a]	Casing Diameter	Sample Method[b]	Analytes and General Notes	Comments
Monticello OU III Monitor Wells — FILTERED (former Millsite * and K. Sommerville property)						
T00-04*	8.35	6.69	1	DT Peristaltic	FIELD Temperature, Conductivity, pH, Turbidity, and Alkalinity (include DO & ORP at locations 88-85, 92-07 and 92-11, and at PeRT wells) LABORATORY **1 - 1L HDPE:** Gross Alpha / Gross Beta *Preservative:* HNO_3 pH <2 **1 - 500 mL Amber HDPE:** (Metals) As, Fe, Mn, Mo, Se, U, V and (Cations) Ca, Mg, K, Na *Preservative:* HNO_3 pH <2 **1 - 125 mL HDPE:** (Anions) Cl, F, SO_4 *Preservative:* cool 4° C **1 - 125 mL HDPE:** (Nitrate/Nitrite) $NO_3 + NO_2$ as N *Preservative:* H_2SO_4 pH < 2, Cool 4° C See Notes below concerning: - QA/QC volumes - NTU criteria - QA/QC Sample IDs - Sample collection prioritization - Well recovery/sampling information	¼" tubing
T00-01*	12.25	9.67	1	DT Peristaltic		
T01-35*	14.80	12.33	1	DT Peristaltic		
92-11	21.28	19.31	2	DT Blue pump		Field: OPR, DO also
PW99-16	16.60	13.86	3/4	DT Peristaltic		? ¼" tubing
88-85	12.00	7.59	2	DT Peristaltic		DATALOGGER (minitrol) Field: OPR, DO also
92-07	21.35	17.09	2	DT Peristaltic		Field: OPR, DO also
PW-17	35.84	33.60	1	Bailer/Pump		Bailed 2L – high NTUs
Monticello OU III Monitor Wells (PeRT Wells on K. Sommerville property) — FILTERED						
R1-M3	13.90	6.58	1	DT Peristaltic	FIELD Temperature, Conductivity, pH, ORP, DO, Turbidity, and Alkalinity LABORATORY **1- 500 mL Amber HDPE** (Metals) As, Fe, Mn, Mo, Se, U, V and (Cations) Ca, Mg, K, Na *Preservative:* HNO_3 pH <2 **1 - 125 mL HDPE** (Anions) Cl, F, SO_4 *Preservative:* cool 4° C **1 - 125 mL HDPE** (Nitrate/Nitrite) $NO_3 + NO_2$ as N *Preservative:* H_2SO_4 pH < 2, Cool 4° C	Note: T6-D went dry @ 1L but recovered
R1-M4	13.77	6.66	1	DT Peristaltic		
R6-M2	14.67	8.08	1	DT Peristaltic		
R6-M3	13.23	9.00	1	DT Peristaltic		
T6-D	13.55	8.41	1	DT Peristaltic		
R6-M4	13.32	8.58	1	DT Peristaltic		
R6-M5	12.37	8.20	1	DT Peristaltic		
R9-M1	14.48	13.23	1	DT Peristaltic		
R10-M1	15.09	13.35	1	DT Peristaltic		

[a] 10/02 measurements
[b] DT = dedicated tubing

NOTES

1. ***DO NOT*** collect extra volume (i.e., Gross Alpha/Beta) for lab QA/QC, it is not required for this project.
2. **QA/QA Sample Numbers:** The numbering for GW QC samples (including PeRT Wells) is 80-xx. Assign a time 5 – 10 minutes from the true sample time
3. **Turbidity** criteria is **< 5 NTUs,** except for PeRT Wells which are sampled after meeting purge volume criteria.
4. **Sample collection priority** for wells with poor well recovery is metals, nitrate/nitrite, anions, gross alpha /gross beta
5. **Water Level Measurements**: During this sampling event water level measurements will only be obtained the wells that are sampled.
6. See Program Directive MSG 03-01 for guidance on WL measurements and sample collection from **wells with poor recovery.**

Attachment 2 - Program Directive MSG 03-01



Field Map
January 2003 locations highlighted

EXPLANATION

- ALLUVIAL GROUND WATER MONITORING WELL
- MANCOS SHALE GROUND WATER MONITORING WELL
- LOWER DAKOTA SANDSTONE GROUND WATER MONITORING WELL

OCTOBER SAMPLING ONLY
OCTOBER AND APRIL ONLY
~~OCTOBER, APRIL & JULY ONLY~~
ALL EVENTS

Attachment 3 - Program Directive MSG 03-01

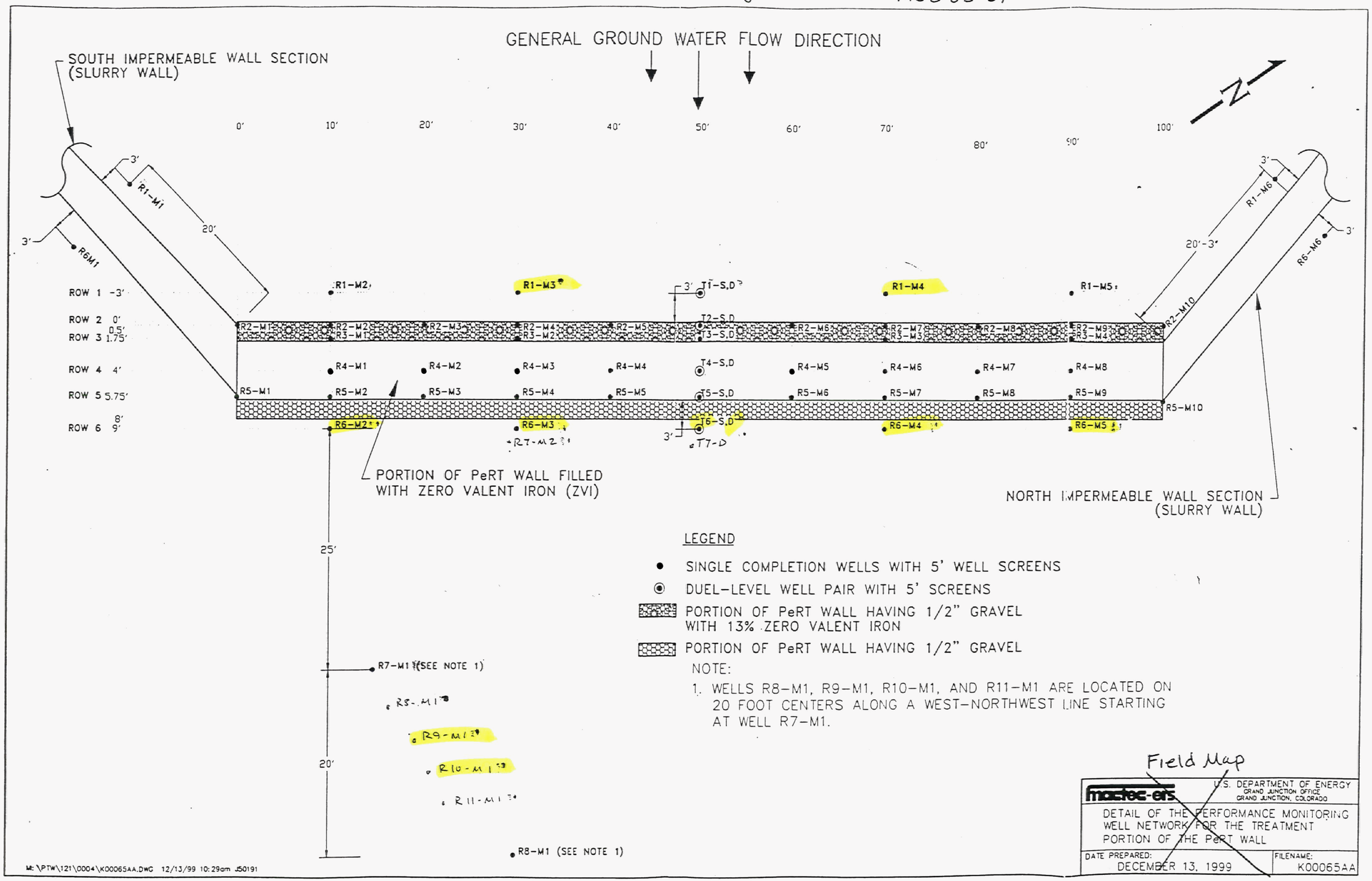


Figure 3.2.1–1. Performance Monitoring Well Network

4-22 (2) OU III AR 576

Program Directive

Monticello MSG/OU III, Annual Monitoring **Program/Project** **Directive No.** MSG 03-02

Task Order and Task No. ST03-105 / 110505008 .

Initiated By: Farlie Pearl, Program Integration QA .
(Name and Organization)

Department/Groups Affected: Field sampling personnel and GJO Analytical Laboratory

Affected Documents: MMTS, OU III, Interim Remedial Action Surface Water and Ground Water Monitoring Plan, Rev. 4, January 2001 (MAC-MSGRAP 1.3.5-1); Tables 3.1-1, 3.2.1-1, 4.6-1, 5.1-1 and 5.1-3, Sections 4.2.2, 4.2.4 and 4.3.3, and Figures 3.1-1, 3.1-2, 3.2-1, and 3.2-2.

Directive Subject: CY 2003 schedule for sample and measurement locations, analyte lists, field parameters, and protocols for sampling wells with poor recovery that have been purged dry.

Justification and Associated New Task Changes: Agreements reached with DOE and the regulators (UDEQ and EPA) during the August 27, 2002 FFA meeting regarding sampling locations and analytes and December 2002 OUIII technical meeting.

Directive:

This directive inclusive of Attachments 1 through 4, establishes the locations and frequency for OU III sampling and measurements during CY 2003. Additionally it establishes the field parameter and analytical requirements for surface water and groundwater samples.

Water level measurements are amended as follows:

Water level measurements are discontinued from all upgradient and cross-gradient locations, from former Millsite wells that are not scheduled to be sampled at any time during CY 2003, and from downgradient non-PeRT well locations that are not scheduled to be sampled at any time during CY 2003. Specific PeRT wells that will be monitored are listed in Attachment 2.

Stream flow measurements will continue to be obtained at Montezuma Creek sample locations as scheduled.

General:

1. At the direction of DOE, Program Directives will continue to be used to direct field activities, affect changes to the Annual Monitoring Plan and implement technical direction resulting from meetings between DOE and regulators.

2. To the extent possible purge and sample all wells using low-flow techniques.

3. For wells that have been purged dry, a sample may be collected provided the following water level criteria has been met: When returning to collect a sample from wells that have been purged dry and or have poor recovery, revisit the well (allow a minimum of 2 hours or wait until the next day) and re-measure and record the WL. If the level has not returned to 75% of the original measured WL do not collect a sample. If the level exceeds the 75%, collect what sample you can, according to the following priority list; metals, nitrate/nitrite, anions, gross alpha/gross beta. Do not return time and again to try to collect sufficient volume for partial or full samples.

Attachments:

1. Attachment 1: Ground Water and Surface Water Sampling Locations and Frequency for Annual Monitoring – establishes the schedule and locations for ground water and surface water samples during calendar year 2003. This table modifies Tables 3.1-1 and discontinues 3.2.1-1 in the plan.

2. Attachment 2: Ground Water Level Measurement Network for CY 2003 – lists the ground water locations that will be measured for water level during April, July, and October. This list modifies Table 4.6-1 in the plan. This list includes all well locations that are sampled at least once during CY 2003, plus 6 PeRT wells which are not sampled.

3. Attachment 3: OU III Analytical Parameters, Container, and Preservation Requirements and List of Field Parameters – identifies the required field parameters, analytes, sample containers, preservation and and holding times. This table and the field parameter information modify Tables 5.1-1 and 5.1-3 and Sections 4.2.2, 4.2.4 and 4.3.3 in the plan.

4. Attachment 4: Monitor Well and Surface Water Location Map – identifies the sample and measurement locations and frequency for CY 2003. This map replaces figures 3.1-1, 3.1-2, 3.2-1 and 3.2-2 in the plan.

Review and Concurrence:

Donna Riddle, QA Manager — Date: 3/19/03

Tim Bartlett, Project Hydrologist — Date: 3/19/03

Effective Date: March 31, 2003 **Expiration Date**: October 31, 2003

Task Order Manager Approval to Issue:

Kristen McClellen, Task Order Manager — Date: 3/26/03

Distribution: (w/ attachments)
Program Directive Log (thru J. Glasgow)
Record File MRAP 1.3.5 (thru J. Glasgow)
OU III Administrative Record (2 copies thru F. Pearl)
Holders of MAC-MSGRAP 1.3.5-1

Ground Water and Surface Water Sampling Locations and Frequency for Annual Monitoring

(modifies Table 3.1–1 and discontinues Table 3.2.1-1)

SAMPLING LOCATION			IRA ANNUAL MONITORING[a] CY 2003			
General Location	Description	Location ID[b]	January	April	July	October
Former Millsite	Alluvial Wells	MW00-01		X		X
		MW00-02		X		
		MW00-03		X		X
		T00-01	X	X	X	X
		T00-04	X	X	X	X
		T01-01		X		X
		T01-02		X	X	X
		T01-04		X		X
		T01-05		X	X	X
		T01-06		X		X
		T01-07		X		
		T01-08		X		X
		T01-09		X		
		T01-10		X		X
		T01-12		X	X	X
		T01-13		X		X
		T01-18		X		X
		T01-19		X	X	X
		T01-20		X		X
		T01-23		X	X	X
		T01-24		X		X
		T01-25		X		X
		T01-26		X		X
		T01-27		X		
		T01-28		X		
		T01-35	X	X	X	X
	Burro Canyon Well	93-01				X
	Mancos Shale Well	31SW93-200-4				X
	Montezuma Creek (Surface Water)	SW00-01		X	X	X
		SW00-02		X	X	X
		SW01-02		X	X	X
		SW01-03		X	X	X
	Wetland 3 (Surface Water)	W3-01		X		
		W3-02		X		X
		W3-03		X		
		W3-04		X		X
	Millsite Seeps (Surface Water)	Seep 1		X	X	X
		Seep 2		X	X	X
		Seep 3		X	X	X
Downgradient	Alluvial Wells (vicinity of PeRT Wall)	PW-10		X	X	X
		PW-14		X		X
		PW-16		X		X
		PW-17	X	X	X	X
		PW-18		X	X	X
		PW-20		X		

Ground Water Level Measurement Network for CY 2003 (modifies Table 4.6–1).

General Location	Description	Well Number
Former Millsite	Alluvial	MW00-01, MW00-02, MW00-03 T00-01T00-04 T01-01, T01-02, 01-04, T01-05, T01-06, T01-07, T01-08, T01-09, T01-10, T01-12, T01-13, T01-18, T01-19, T01-20, T01-23, T01-24, T01-25, T01-26, T01-27, T01-28 and T01-35
	Mancos Shale	31SW93-200-4
Downgradient	Alluvial	82-07, 82-08, 88-85, 92-07, 92-08, 92-09, 92-11, 95-03, P92-02, P92-06, MW00-06, MW00-07, PW-10, PW-14, PW-16, PW-17, PW-18, PW-20, PW-22, PW-23, PW-28, PW99-16, R1-M1, R1-M3, R1-M4, R1-M6, R2-M4, R2-M7, R3-M2, R3-M3, R4-M3, R4-M6, R6-M1, R6-M2, R6-M3, T6-D, R6-M4, R6-M5, R6-M6, R7-M1, R8-M1, R9-M1, R10-M1, R11-M1
	Burro Canyon	92-10 and 95-04
	Burro Canyon/Dakota Sandstone	83-70
	Dakota Sandstone	92-12

OU III Analytical Parameters, Container, and Preservation Requirements and List of Field Parameters *(modifies Tables 5.1-1 and 5.1-3)*

OU III Ground Water and Surface Water Locations:

Analytical Parameter	Container (Type / Size)		Preservation	Holding Time
Metals (As, Fe, Mn, Mo, Se, U, V) and Major Cations (Ca, Mg, K, and Na)	HDPE	500mL	Filter by 0.45-µm filter; HNO_3 to pH<2	6 Months
Major Anions (Cl, F, and SO_4)	HDPE	125 mL	Filter by 0.45-µm filter; Cool to 4° C	28 Days
Nitrate + Nitrite (NO_3 + NO_2 as N)	HDPE	125 mL	Filter by 0.45-µm filter; Cool to 4° C; H_2SO_4 to pH<2	28 Days
Gross Alpha/Gross Beta	HDPE	1 L	*Ground Water*: filter by 0.45-µm filter; *Surface Water*: unfiltered; HNO_3 to pH<2 (both GW and SW)	6 Months
Total Dissolved Solids (filterable residue)[1] (*Surface Water* only)	HDPE	125 mL	Cool to 4° C	7 Days
Isotopic Uranium (U-234, and U-238)[2] (*Surface Water* only)	HDPE	1 L	(Unfiltered) HNO_3 to pH<2	6 Months

[1] Collect a sample for TDS analysis from surface water locations only
[2] Collect a 1 Liter sample unfiltered for Isotopic Uranium (U-234 and U-238) analyses at all surface water sites.

OU III Seeps and PeRT Well Locations:

Analytical Parameter	Container (Type / Size)		Preservation	Holding Time
Metals (As, Fe, Mn, Mo, Se, U, V), and Major Cations (Ca, K, Mg, and Na)	HDPE	500ml	Filtered by 0.45 µm filter HNO_3 to pH < 2	6 months
Major Anions (Cl, F, SO_4)	HDPE	125ml	Filtered by 0.45 µm filter Cool to 4° C	28 days
Nitrate + Nitrite (NO_3 + NO_2 as N)	HDPE	125ml	Filtered by 0.45 µm filter Cool to 4° C H_2SO_4 to pH < 2	28 days

Field Parameter requirements: *(modifies Sections 4.2.2, 4.2.4 and 4.3.3)*

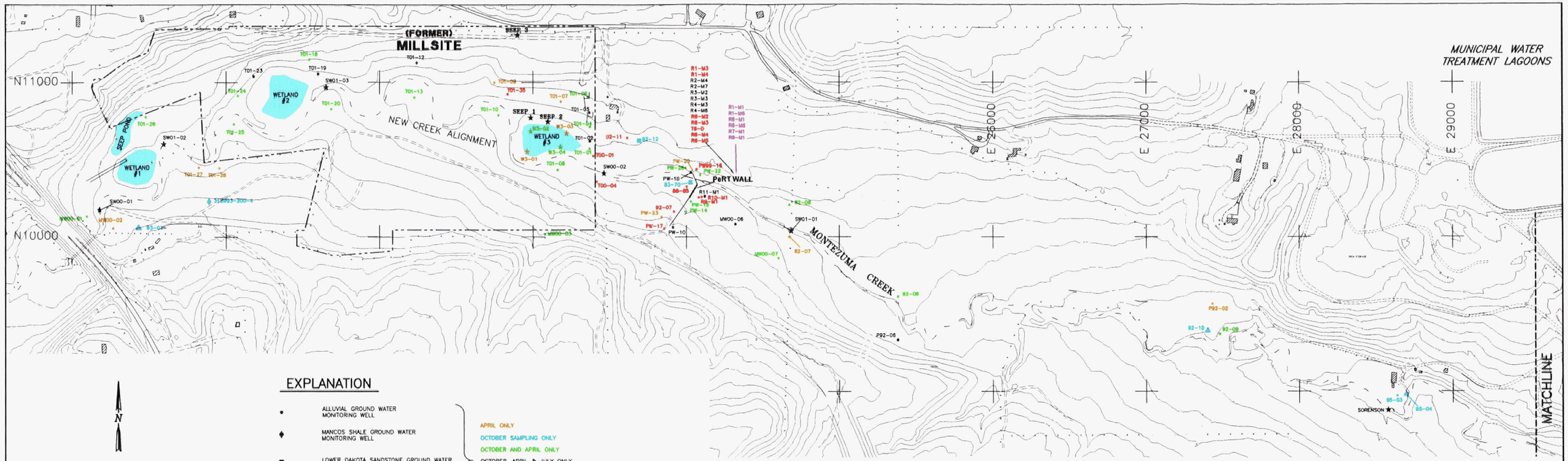
Seep and Surface Water locations include:

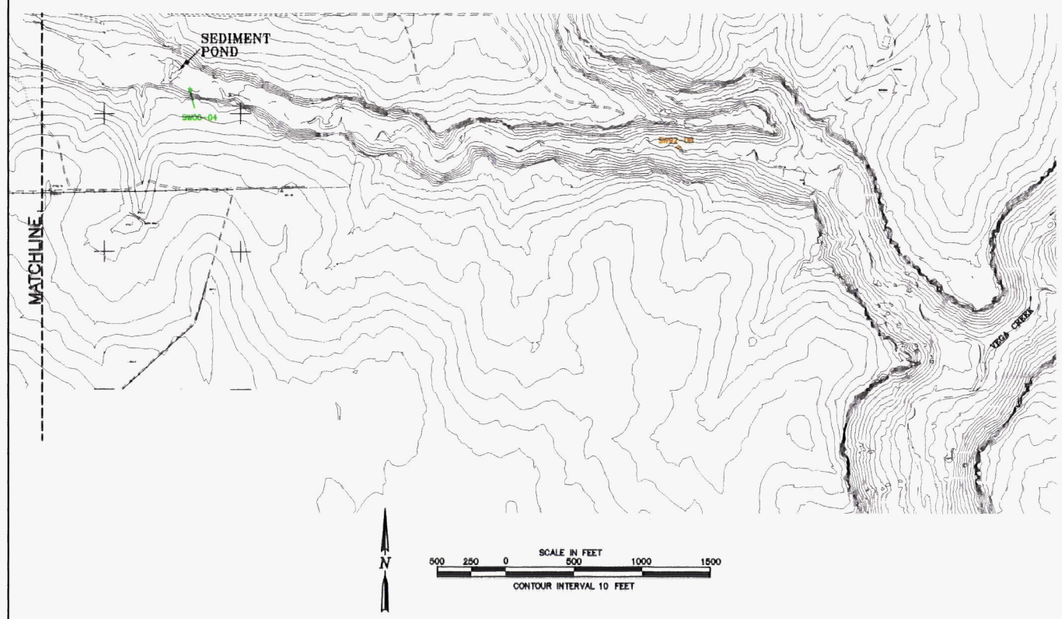
Temperature
pH
Conductivity
Alkalinity

Ground Water locations include:

Temperature
pH
Conductivity
Turbidity
Alkalinity

Additionally, DO and ORP will be measured at locations 88-85, 92-07, and 92-11 and at all PeRT wells that are sampled.





EXPLANATION

- ALLUVIAL GROUND WATER MONITORING WELL
- MANCOS SHALE GROUND WATER MONITORING WELL
- LOWER DAKOTA SANDSTONE GROUND WATER MONITORING WELL
- BURRO CANYON AQUIFER GROUND WATER MONITORING WELL
- SURFACE WATER CHEMISTRY LOCATION
- FORMER MILLSITE BOUNDARY
- NEW WETLAND AREA

APRIL ONLY
OCTOBER SAMPLING ONLY
OCTOBER AND APRIL ONLY
OCTOBER, APRIL & JULY ONLY
ALL EVENTS
SAMPLING DISCONTINUED–WATER LEVEL MEASURED

N

SCALE IN FEET
300 150 0 300 600 900
CONTOUR INTERVAL 10 FEET

N

SCALE IN FEET
500 250 0 500 1000 1500
CONTOUR INTERVAL 10 FEET

SAMPLING LOCATION			IRA ANNUAL MONITORING[a] CY 2003			
General Location	Description	Location ID[b]	January	April	July	October
Former Millsite	Alluvial Wells	MW00-01		X		X
		MW00-02		X		
		MW00-03		X		X
		T00-01	X	X	X	X
		T00-04	X	X	X	X
		T01-01		X		X
		T01-02		X	X	X
		T01-04		X		X
		T01-05		X	X	X
		T01-06		X		X
		T01-07		X		
		T01-08		X		X
		T01-09		X		
		T01-10		X		X
		T01-12		X	X	X
		T01-13		X		X
		T01-18		X		X
		T01-19		X	X	X
		T01-20		X		X
		T01-23		X	X	X
		T01-24		X		X
		T01-25		X		X
		T01-26		X		X
		T01-27		X		
		T01-28		X		
		T01-35	X	X	X	X
	Burro Canyon Well	93-01				X
	Mancos Shale Well	31SW93-200-4				X
	Montezuma Creek (Surface Water)	SW00-01		X	X	X
		SW00-02		X	X	X
		SW01-02		X	X	X
		SW01-03		X	X	X
	Wetland 3 (Surface Water)	W3-01		X		
		W3-02		X		X
		W3-03		X		
		W3-04		X		X
	Millsite Seeps (Surface Water)	Seep 1		X	X	X
		Seep 2		X	X	X
		Seep 3		X	X	X
Downgradient	Alluvial Wells (Vicinity of PeRT Wall)	PW-10		X	X	X
		PW-14		X		X
		PW-16		X		X
		PW-17	X	X	X	X
		PW-18		X	X	X
		PW-20		X		

SAMPLING LOCATION			IRA ANNUAL MONITORING[a] CY 2003			
General Location	Description	Location ID[b]	January	April	July	October
Downgradient	Alluvial Wells (Vicinity of PeRT Wall)	PW-22		X		X
		PW-23		X		
		PW-28		X		X
		PW99-16	X	X	X	X
	Alluvial Wells (PeRT wells)	R1-M3	X	X	X	X
		R1-M4	X	X	X	X
		R2-M4		X	X	X
		R2-M7		X	X	X
		R3-M2		X	X	X
		R3-M3		X	X	X
		R4-M3		X	X	X
		R4-M6		X	X	X
		R6-M2	X	X	X	X
		R6-M3	X	X	X	X
		T6-D	X	X	X	X
		R6-M4	X	X	X	X
		R6-M5	X	X	X	X
		R9-M1	X	X	X	X
		R10-M1	X	X	X	X
		R11-M1		X	X	X
	Alluvial Wells	MW00-06		X	X	X
		MW00-07		X		X
		92-07		X		
		92-08		X		X
		88-85	X	X	X	X
		92-07	X	X	X	X
		92-08		X		X
		92-05		X		X
		92-11	X	X	X	X
		95-03		X		X
		P92-02		X		
		P92-08		X	X	X
	Burro Canyon Wells	95-04				X
		92-10				X
	Burro Canyon/Dakota Well	83-70				X
	Dakota Sandstone Well	92-12				X
	Montezuma Creek (Surface Water)	SW01-01		X	X	X
		Sorenson		X	X	X
		SW00-04		X		X
		SW92-08		X		

[a] Listed locations and sample requirements are subject to change through Program Directives.
[b] Wells 31NEW3-200, 95-06, and 95-07 (not listed above) are discontinued from water level measurements and will be sampled only in the years prior to the CERCLA 5-Year review. The next occurrence will be in October 2005.

NOTES:
ABANDON UPGRADIENT ALLUVIAL WELL 92-05 DURING NEXT PHASE OF WELL ABANDONMENT.
ABANDON OR TURN WATER RIGHT OVER TO THE CITY OF MONTICELLO FOR UPGRADIENT WELLS 92-01, 92-02, 92-03, 92-04, 92-06, AND 92-13.
ABANDON MILLSITE BEDROCK WELLS 31SW93-200-1, -200-2, AND -200-3 DURING NEXT PHASE OF WELL ABANDONMENT.
ABANDON DOWNGRADIENT ALLUVIAL WELLS P92-01, P92-04, P92-07, T99-06, T99-07, AND T99-10 BECAUSE THEY ARE DRY OR PRODUCE INSUFFICIENT WATER.
ABANDON DOWNGRADIENT ALLUVIAL WELL T99-05, BECAUSE IT PROVIDES DUPLICATE INFORMATION TO WELL 95-03.
ABANDON CROSS-GRADIENT BEDROCK WELLS 31SW93-197-2, -197-3, -197-4, -197-5 DURING NEXT PHASE OF WELL ABANDONMENT.
WATER LEVELS WILL BE MEASURED AT ALL ACTIVELY MONITORED WELL LOCATIONS DURING EACH SAMPLING EVENT. SURFACE WATER FLOW MEASUREMENTS WILL BE FIELD LOCATED IN THE PROXIMITY OF THE SAMPLING LOCATION DEPENDENT ON CURRENT FLOW CONDITIONS.

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION OFFICE GRAND JUNCTION, COLORADO	Work Performed by S. M. Stoller Corporation Under DOE Contract No. DE-AC13-02GJ79491
PLATE 1 WELL AND SURFACE WATER LOCATION MAP (Program Directive MSG 03-02-Attachment 4)	
DATE PREPARED: MARCH 26, 2003	FILENAME: Q0026101

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4-22(3)

OUIII AR 576

Program Directive

Monticello MSG/OU III, Annual Monitoring **Program/Project** **Directive No.** MSG 03-03

Task Order and Task No. ST04-102-M5-203 / LMM5-203 .

Initiated By: Farlie Pearl, Program Integration QA .
(Name and Organization)

Department/Groups Affected: Field sampling personnel and GJO Analytical Laboratory

Affected Documents: MMTS, OU III, Interim Remedial Action Surface Water and Ground Water Monitoring Plan, Rev. 4, January 2001 (MAC-MSGRAP 1.3.5-1); Tables 3.1-1, 3.2.1-1, 4.6-1, 5.1-1 and 5.1-3 and Sections 4.2.2, 4.2.4 and 4.3.3.

Directive Subject: Fiscal year (FY) 2004 schedule for sample and measurement locations, analyte lists, field parameters, and protocols for sampling wells with poor recovery that have been purged dry.

Justification and Associated New Task Changes: Agreement reached with DOE regarding sampling locations and analytes.

Directive:

This directive inclusive of Attachments 1 through 4, establishes the locations and frequency for OU III sampling and measurements during FY 2004. Additionally, it establishes the field parameter and analytical requirements for surface water and groundwater samples.

Water level measurements are amended as follows:

1. Water level measurements are discontinued from all up-gradient and cross-gradient locations, from select former Millsite, PeRT wall, and down-gradient wells that are not scheduled to be sampled at any time during FY 2004. The wells that will be monitored are listed in Attachment 2.

2. During January, water level measurements will only be obtained from the wells that are scheduled to be sampled.

Stream flow measurements will continue to be obtained at scheduled sample locations along Montezuma Creek.

General:

1. At the direction of DOE, Program Directives will continue to be used to direct field activities, affect changes to the Annual Monitoring Plan and implement technical direction resulting from meetings between DOE and regulators.

2. To the extent possible purge and sample all wells using low-flow techniques

3. For wells that have been purged dry, a sample may be collected provided the following water level criteria has been met: When returning to collect a sample from wells that have been purged dry and or have poor recovery, revisit the well (allow a minimum of 2 hours or wait until the next day) and re-measure and record the WL. If the level has not returned to 75% of the original measured WL do not collect a sample. If the level exceeds the 75%, collect what sample you can, according to the following priority list; metals, nitrate/nitrite, anions, gross alpha/gross beta. Do not return time and again to try to collect sufficient volume for partial or full samples.

Attachments:

1. Attachment 1: *Ground Water and Surface Water Sampling Locations and Frequency for Annual Monitoring* – establishes the schedule and locations for ground water and surface water samples during FY 2004. This table modifies Table 3.1-1 and replaces Table 3.2.1-1 in the plan.

2. Attachment 2: *Ground Water Level Measurement Network for FY 2004* – lists the ground water locations that will be measured for water level during October, April, and July. This list modifies Table 4.6-1 in the plan.

Attachments: (continued)

3. Attachment 3: *OU III Analytical Parameters, Container, and Preservation Requirements and List of Field Parameters* – identifies the required field parameters, analytes, sample containers, preservation and and holding times. This table and the field parameter information modify Tables 5.1-1 and 5.1-3 and Sections 4.2.2, 4.2.4 and 4.3.3 in the plan.

4. Attachment 4: *Monitor Well and Surface Water Location Map* – identifies the sample and measurement locations and frequency for FY 2004

Review and Concurrence:

Donna J. Riddle — 9/30/03

Donna Riddle, QA Manager — Date

T. Bartlett — 9/30/03

Tim Bartlett, Project Hydrologist — Date

Effective Date: October 1, 2004 (3/30) **Expiration Date**: July 31, 2004

Task Order Manager Approval to Issue:

Kristen McClellen — 9/30/03

Kristen McClellen, Task Order Manager — Date

Distribution: (w/ attachments)
Program Directive Log (thru J. Glasgow)
Record File MRAP 1.3.5 (thru J. Glasgow)
OU III Administrative Record (2 copies thru F. Pearl)
Holders of MAC-MSGRAP 1.3.5-1

Ground Water and Surface Water Sampling Locations and Frequency for Annual Monitoring (modifies Table 3.1–1 and replaces Table 3.2.1-1)

SAMPLING LOCATION			IRA ANNUAL MONITORING FY 2004[a]			
General Location	Description	Location ID[b]	October 2003	January 2004	April 2004	July 2004
Former Millsite	Alluvial Wells	MW00-01	X		X	
		T00-01	X	X	X	X
		T00-04	X	X	X	X
		T01-01	X		X	
		T01-02	X		X	X
		T01-04	X		X	
		T01-05	X		X	X
		T01-07	X		X	
		T01-08	X		X	
		T01-12	X		X	X
		T01-13	X		X	
		T01-18	X		X	
		T01-19	X		X	X
		T01-20	X		X	
		T01-23	X		X	X
		T01-24	X		X	
		T01-25	X		X	
		T01-26	X		X	
		T01-35	X	X	X	X
	Burro Canyon Well	93-01	X			
	Mancos Shale Well	31SW93-200-4	X			
	Montezuma Creek (Surface Water)	SW00-01	X		X	X
		SW00-02	X		X	X
		SW01-02	X		X	X
		SW01-03	X		X	X
		W3-03	X		X	
		W3-04	X		X	
	Millsite Seeps (Surface Water)	Seep 1	X		X	X
		Seep 2	X		X	X
		Seep 3	X		X	X
		Seep 5	X		X	X
		Seep 6	X		X	X
Downgradient	Alluvial Wells	MW00-06	X		X	X
		MW00-07	X		X	
		82-08	X		X	
		88-85	X	X	X	X
		92-07	X	X	X	X
		92-08	X		X	
		92-09	X		X	
		92-11	X	X	X	X
		95-03	X			
		P92-06	X		X	X
	Burro Canyon	95-04	X			
		92-10	X			
	Burro Canyon /Dakota Well	83-70	X			
	Dakota Sandstone Well	92-12	X			

SAMPLING LOCATION			IRA ANNUAL MONITORING FY 2004[a]			
General Location	Description	Location ID[b]	October	January	April	July
Downgradient	Alluvial Wells (vicinity of PeRT Wall)	PW-10	X		X	
		PW-16	X		X	
		PW-17	X	X	X	X
		PW-22	X		X	
		PW-23	X		X	X
		PW-28	X		X	X
		PW99-16	X	X	X	X
	Alluvial Wells (PeRT wells)	R1-M3	X	X	X	X
		R1-M4	X	X	X	X
		R2-M4	X		X	X
		R2-M7	X		X	X
		R3-M2	X		X	X
		R3-M3	X		X	X
		R4-M3	X		X	X
		R4-M6	X		X	X
		R6-M2	X	X	X	X
		R6-M3	X	X	X	X
		T6-D	X	X	X	X
		R6-M4	X	X	X	X
		R6-M5	X	X	X	X
		R9-M1	X	X	X	X
		R10-M1	X	X	X	X
		R11-M1	X		X	X
	Montezuma Creek (Surface Water)	SW01-01	X		X	X
		Sorenson	X		X	X
		SW00-04	X		X	X
		SW92-08	X		X	X

[a] Listed locations and sample requirements are subject to change through Program Directives.

[b] Wells 31NE93-205, 95-06, and 95-07 (not listed above) are discontinued from water level measurements and will be sampled only in the years prior to the CERCLA 5-Year review. The next occurrence will be in October 2006.

Ground Water Level Measurement Network for FY 2004 (modifies Table 4.6–1).

General Location	Description	Well Number
Former Millsite	Alluvial	MW00-01, MW00-02, MW00-03, T00-01, T00-04, T01-01, T01-02, 01-04, T01-05, T01-06, T01-07, T01-08, T01-09, T01-10, T01-12, T01-13, T01-18, T01-19, T01-20, T01-23, T01-24, T01-25, T01-26, T01-27, T01-28 and T01-35
	Mancos Shale	31SW93-200-4
	Burro Canyon	93-01
Downgradient	Alluvial	82-07, 82-08, 88-85, 92-07, 92-08, 92-09, 92-11, 95-03, P92-02, P92-06, MW00-06, MW00-07, PW-10, PW-14, PW-16, PW-17, PW-18, PW-20, PW-22, PW-23, PW-28, PW99-16, R1-M1, R1-M3, R1-M4, R1-M6, R2-M4, R2-M7, R3-M2, R3-M3, R4-M3, R4-M6, R6-M1, R6-M2, R6-M3, T6-D, R6-M4, R6-M5, R6-M6, R7-M1, R8-M1, R9-M1, R10-M1, R11-M1
	Burro Canyon	92-10 and 95-04
	Burro Canyon / Dakota Sandstone	83-70
	Dakota Sandstone	92-12

OU III Analytical Parameters, Container, and Preservation Requirements and List of Field Parameters *(modifies Tables 5.1-1 and 5.1-3)*

OU III Ground Water and Surface Water Locations:

Analytical Parameter	Container (Type / Size)	Preservation	Holding Time
Metals (As, Fe, Mn, Mo, Se, U, V)	HDPE 500mL	Filter by 0.45-µm filter; HNO_3 to pH<2	6 Months
Major Cations (Ca, Mg, K, and Na) (from same bottles as metals)	See metals		
Major Anions (Cl, F, and SO_4)	HDPE 125 mL	Filter by 0.45-µm filter; Cool to 4° C	28 Days
Nitrate + Nitrite (NO_3 + NO_2 as N)	HDPE 125 mL	Filter by 0.45-µm filter; Cool to 4° C; H_2SO_4 to pH<2	28 Days
Gross Alpha/Gross Beta	HDPE 1 L	*Ground Water*: filter by 0.45-µm filter; *Surface Water*: unfiltered; HNO_3 to pH<2 (both GW and SW)	6 Months
Total Dissolved Solids (filterable residue)[1] (*Surface Water* only)	HDPE 125 mL	Cool to 4° C	7 Days
Isotopic Uranium (U-234, and U-238)[2] (*Surface Water* only)	HDPE 1 L	(Unfiltered) HNO_3 to pH<2	6 Months

[1] Collect a sample for TDS analysis from surface water locations only
[2] Collect a 1 Liter sample unfiltered for Isotopic Uranium (U-234 and U-238) analyses at all surface water sites.

OU III Seeps and PeRT Well Locations:

Analytical Parameter	Container (Type / Size)	Preservation	Holding Time
Metals (As, Fe, Mn, Mo, Se, U, V)	HDPE 500ml	Filtered by 0.45 µm filter HNO_3 to pH < 2	6 months
Cations (Ca, K, Mg, and Na) (from the same bottle as Metals)	See Metals		
Anions (Cl, F, SO_4)	HDPE 125ml	Filtered by 0.45 µm filter Cool to 4° C	28 days
Nitrate + Nitrite (NO_3 + NO_2 as N)	HDPE 125ml	Filtered by 0.45 µm filter Cool to 4° C H_2SO_4 to pH < 2	28 days

Field Parameter requirements: (modifies Sections 4.2.2, 4.2.4 and 4.3.3)

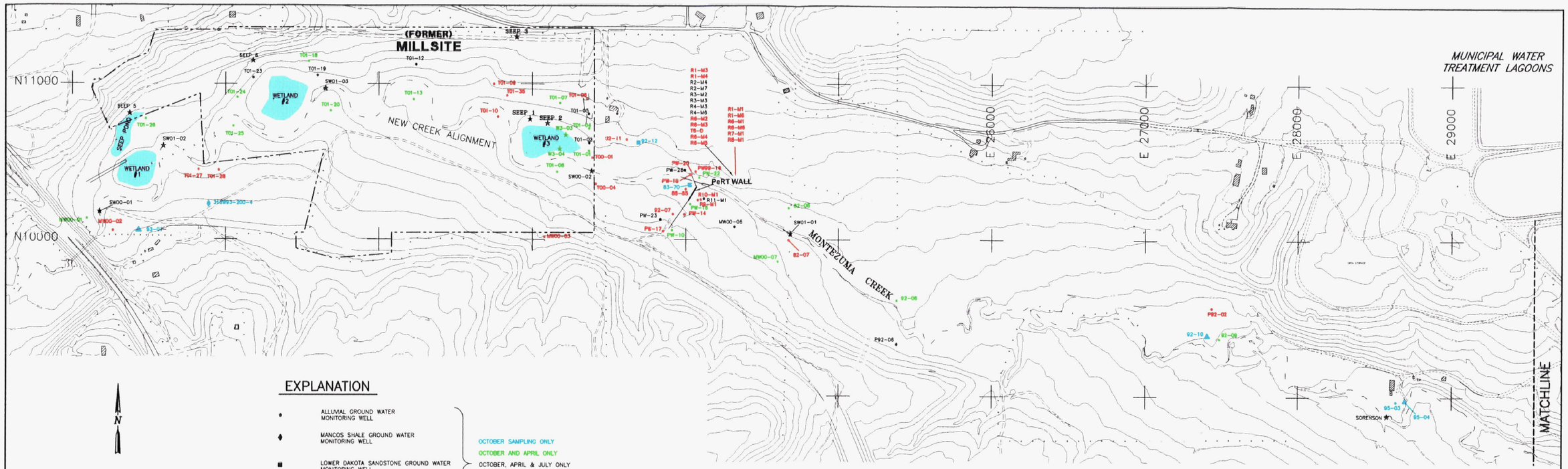
Seep and Surface Water locations include:

Temperature
pH
Conductivity
Alkalinity

Ground Water locations include:

Temperature
pH
Conductivity
Turbidity
Alkalinity

Additionally, DO and ORP will be measured at locations 88-85, 92-07, and 92-11 and at all PeRT wells that are sampled.



EXPLANATION

- ALLUVIAL GROUND WATER MONITORING WELL
- MANCOS SHALE GROUND WATER MONITORING WELL
- LOWER DAKOTA SANDSTONE GROUND WATER MONITORING WELL
- BURRO CANYON AQUIFER GROUND WATER MONITORING WELL
- SURFACE WATER CHEMISTRY LOCATION

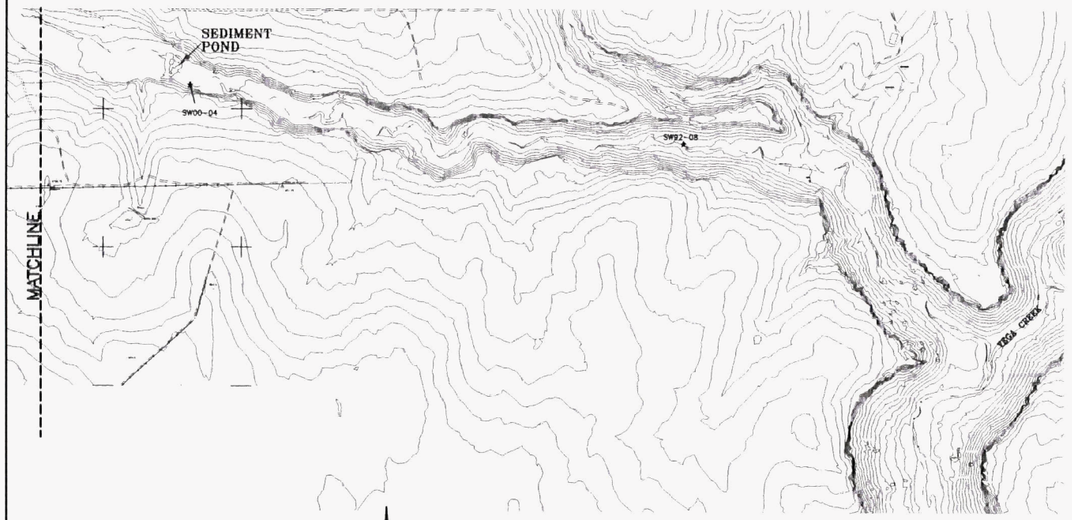
OCTOBER SAMPLING ONLY
OCTOBER AND APRIL ONLY
OCTOBER, APRIL & JULY ONLY
ALL EVENTS
SAMPLING DISCONTINUED–WATER LEVEL MEASURED

FORMER MILLSITE BOUNDARY

NEW WETLAND AREA

N

SCALE IN FEET
300 150 0 300 600 900
CONTOUR INTERVAL 10 FEET



N

SCALE IN FEET
500 250 0 500 1000 1500
CONTOUR INTERVAL 10 FEET

SAMPLING LOCATION			IRA ANNUAL MONITORING FY 2004[a]			
General Location	Description	Location ID[b]	October 2003	January 2004	April 2004	July 2004
Former Millsite	Alluvial Wells	MW00-01	X		X	
		T00-01	X	X	X	X
		T00-04	X	X	X	X
		T01-01	X		X	
		T01-02	X		X	X
		T01-04	X		X	
		T01-05	X		X	X
		T01-07	X		X	
		T01-08	X		X	
		T01-12	X		X	X
		T01-13	X		X	
		T01-18	X		X	
		T01-19	X		X	X
		T01-20	X		X	
		T01-23	X		X	X
		T01-24	X		X	
		T01-25	X		X	
		T01-26	X		X	
		T01-35	X	X	X	X
	Burro Canyon Well	93-01	X			
	Mancos Shale Well	31SW93-200-4	X			
	Montezuma Creek (Surface Water)	SW00-01	X		X	X
		SW00-02	X		X	X
		SW01-02	X		X	X
		SW01-03	X		X	X
		W3-03	X		X	
		W3-04	X		X	
	Millsite Seeps (Surface Water)	Seep 1	X		X	X
		Seep 2	X		X	X
		Seep 3	X		X	X
		SEEP 5	X		X	X
		SEEP 6	X		X	X
Downgradient	Alluvial Wells	MW00-06	X		X	X
		MW00-07	X		X	
		82-08	X		X	
		88-85	X	X	X	X
		92-07	X	X	X	X
		92-08	X		X	
		92-09	X		X	
		92-11	X	X	X	X
		95-03	X			
		P92-06	X		X	X
	Burro Canyon	95-04	X			
		92-10	X			
	Burro Canyon /Dakota Well	83-70	X			
	Dakota Sandstone Well	92-12	X			

SAMPLING LOCATION			IRA ANNUAL MONITORING FY 2004[a]			
General Location	Description	Location ID[b]	October	January	April	July
Downgradient	Alluvial Wells (vicinity of PeRT Wall)	PW-10	X		X	
		PW-16	X		X	
		PW-17	X	X	X	X
		PW-22	X		X	
		PW-23	X		X	X
		PW-28	X		X	X
		PW99-16	X	X	X	X
	Alluvial Wells (PeRT wells)	R1-M3	X	X	X	X
		R1-M4	X	X	X	X
		R2-M4	X		X	X
		R2-M7	X		X	X
		R3-M2	X		X	X
		R3-M3	X		X	X
		R4-M3	X		X	X
		R4-M5	X		X	X
		R5-M2	X	X	X	X
		R6-M3	X	X	X	X
		T6-D	X	X	X	X
		R6-M4	X	X	X	X
		R6-M5	X	X	X	X
		R9-M1	X	X	X	X
		R10-M1	X	X	X	X
		R11-M1	X		X	X
	Montezuma Creek (Surface Water)	SW01-01	X		X	X
		Sorenson	X		X	X
		SW00-04	X		X	X
		SW92-08	X		X	X

[a] Listed locations and sample requirements are subject to change through Program Directives.
[b] Wells 31NE93-205, 95-08, and 95-07 (not listed above) are discontinued from water level measurements and will be sampled only in the years prior to the CE RCLA 5-Year review. The next occurrence will be in October 200 6.

Ground Water Level Measurement Network for FY 2004[a]

General Location	Description	Well Number
Former Millsite	Alluvial	MW00-01, MW00-02, MW00-03, T00-01, T00-04, T01-01, T01-02, 01-04, T01-05, T01-06, T01-07, T01-08, T01-09, T01-10, T01-12, T01-13, T01-18, T01-19 T01-20, T01-23, T01-24, T01-25, T01-26, T01-27, T01-28 and T01-35
	Mancos Shale	31SW93-200-4
	Burro Canyon	93-01
Downgradient	Alluvial	82-07, 82-08, 88-85, 92-07, 92-08, 92-09, 92-11, 95-03, P92-02, P92-06, MW00-06, MW00-07, PW-10, PW-14, PW-16, PW-17, PW-18, PW-20, PW-22, PW-23, PW-28, PW99-16, R1-M1, R1-M3, R1-M4, R1-M6, R2-M4, R2-M7, R3-M2, R3-M3, R4-M3, R4-M6, R5-M1, R6-M2, R6-M3, T6-D, R6-M4, R6-M5, R6-M6, R7-M1, R8-M1, R9-M1, R10-M1, R11-M1
	Burro Canyon	92-10 and 95-04
	Burro Canyon / Dakota Sandstone	83-70
	Dakota Sandstone	92-12

[a] During January, only the locations scheduled to be sampled are measured.

NOTES:
ABANDON UPGRADIENT ALLUVIAL WELL 92-05 DURING NEXT PHASE OF WELL ABANDONMENT.
ABANDON OR TURN WATER RIGHT OVER TO THE CITY OF MONTICELLO FOR UPGRADIENT WELLS 92-01, 92-02, 92-03, 92-04, 92-06, AND 92-13.
ABANDON MILLSITE BEDROCK WELLS 31SW93-200-1, -200-2, AND -200-3 DURING NEXT PHASE OF WELL ABANDONMENT.
ABANDON DOWNGRADIENT ALLUVIAL WELLS P92-01, P92-04, P92-07, T99-06, T99-07, AND T99-10 BECAUSE THEY ARE DRY OR PRODUCE INSUFFICIENT WATER.
ABANDON DOWNGRADIENT ALLUVIAL WELL T99-05, BECAUSE IT PROVIDES DUPLICATE INFORMATION TO WELL 95-03.
ABANDON CROSS-GRADIENT BEDROCK WELLS 31SW93-197-2, -197-3, -197-4, -197-5 DURING NEXT PHASE OF WELL ABANDONMENT.
WATER LEVELS WILL BE MEASURED AT ALL ACTIVELY MONITORED WELL LOCATIONS DURING EACH SAMPLING EVENT. SURFACE WATER FLOW MEASUREMENTS WILL BE FIELD LOCATED IN THE PROXIMITY OF THE SAMPLING LOCATION DEPENDENT ON CURRENT FLOW CONDITIONS.

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION OFFICE
GRAND JUNCTION, COLORADO

Work Performed by
S. M. Stoller Corporation
Under DOE Contract
No. DE-AC13-02GJ79491

PLATE 1 WELL AND SURFACE WATER LOCATION MAP
(Program Directive MSG 03-03-Attachment 4)

DATE PREPARED: OCTOBER 1, 2003
FILENAME: Q0026102

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